We claim:

1. A method for implementing macro-diversity management by using an intelligent VBS, wherein each VBS area includes a plurality of cell clusters and each VBS area corresponds to one mobile server, and the mobile server contains load information and handover information of all cells included in the VBS area, the method comprising the steps of:

a base station in a cell cluster, which has highest load and highest normalized handover rate, is selected as a parent base station, and the selected parent base station performs macro-diversity on signals from a same user equipment received by all cells of the cell cluster;

selection of cluster is made based on the following minimized target cost functions:

$$c_1 \sum_k sc_k + c_2 \sum_i \sum_j h_{ij} z_{ij} + c_3 \sum_i \sum_j h_{ij} \left(w_{ij} - z_{ij} \right)$$
(1)

where:

$$\sum_k x_{ik} = 1, \text{ for all } i,$$
(2)

wijk≤xik，wijk≤xjk，wijk≥xik+xjk-1, for all i，j and k (3)

zijm≤xik，zijm≤xjm，zijm≥xim+xjm-1，for all i，j and m (4)

$$\sum_{i \in Sl_k} \sum_{j \in S2_k} B_{ij} \geq 1$$
(5)

$$\sum_i \sum_{i \prec j} w_{ij} B_{ij} \leq CI \sum_i \sum_{i \prec j} B_{ij}$$
(6)

where：

c，c2 and c3 represent respective weights of these three cost functions in total cost function, and c1+c2+c3=1；

IEE020020PUS

i, j denote cells i and j;

k denotes cell cluster, and m denotes VBS;

SC_k is soft capacity of cell cluster k;

h_{ij} is handover loading from cell i to cell j;

$z_{ij}=1-\sum_m z_{ijm}$, where z_{ijm} is a binary variable, and when cells i and j belong to VBS m, $z_{ijm}=1$;

$w_{ij}=1-\sum_k w_{ijk}$, where w_{ijk} is a binary variable, and when cells i and j belong to cell cluster k, $w_{ijk}=1$;

x_{ik} is a binary variable, and when cell i belongs to cell cluster k, $x_{ik}=1$;

x_{jk} is a binary variable, and when cell j belongs to cell cluster k, $x_{jk}=1$;

x_{im} is a binary variable, and when cell i belongs to VBS m, $x_{im}=1$;

x_{jm} is a binary variable, and when cell j belongs to VBS m, $x_{jm}=1$;

if cell i is adjacent to cell j, $B_{ij}=1$;

$S1_k$ is a subset of CBS_k, that is, $S1_k \subset CBS_k$, $S1_k \neq \varnothing$ and $S1_k \neq CBS_k$;

$S2_k$ is a complementary set for $S1_k$, and $S2_k = CBS_k - S1_k$;

CBS_k is a set of cells included in cell cluster k.

2. The method as defined in claim 1, wherein different VBSs can exchange information between each other through the mobile server, whereby macro-diversities of inter-cluster and inter-VBS are performed.

3. The method as defined in claim 1, wherein if there is a multiple-services user in a cell, the user with higher data rate is normalized into several users with lower data rate.

IEE020020PUS

4. The method as defined in claim 1, wherein requirements for transmit power of user equipment is reduced by means of the parent base station performing macro-diversity on signals from the same user equipment received by all cells of the cell cluster, and interference level and load of uplink of the cell are also reduced.

5. The method as defined in claim 1, the selection of the parent base station is adaptively adjusted based on information about inter-cell load change and handover change collected by the mobile server and change of size of the cell cluster.

6. The method as defined in claim 1, wherein the mobile server is a database, which contains the load information and handover information of all cells included in a VBS area.

7. The method as defined in claim 1, the base stations in all cells of VBS area are connected to the mobile server in a wired manner, handover information of all users in a VBS area and load information of each cell are transmitted to the mobile server through base station, and the statistical information is obtained from the mobile server.

IEE020020PUS